Varied nanostructures from a single multifunctional molecular material

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Résumé en anglais	The control of the morphology of nanostructures formed from a single component molecular material incorporating electron accepting and donating moieties is shown, from both solution and gel states. The compound comprises one tetrathiafulvalene (TTF) and two pyrene units which act as the [small pi]-electron rich and deficient units, respectively, and which are united by amide-containing linkers whose additional role is to aide aggregation by hydrogen bonding. This role was demonstrated by IR and NMR spectroscopy. The gels were deposited onto surfaces and the solvent allowed to evaporate, leaving films formed by meshes of fibres with different morphologies in accord with the different solvents used to form the materials. Doping of these xerogels with iodine vapour afforded conducting films whose characteristics were probed with current sensing atomic force microscopy (CS-AFM), providing current maps and I-V curves which show how dramatically the processing solvent can influence the electronic properties of these xerogel-derived materials.
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